

Fremont

Building Official

Code Enforcement

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Guide to Decks

The International Residential Code (IRC) provides limited specific direction on the requirements for decks; while much of the prescriptive requirements may be contained elsewhere within specific provisions of the code, no specific deck section or chapter exist. This lack of prescriptive design reference makes it tough to gather, even the minimum requirements, directly from the code provisions. Deck designs and layout vary greatly.

Live load, stairway width, riser height, tread depth, handrails, guards, baluster spacing, depth of footings, flashing, joist size, beam size, post spacing and the like are all contained within the IRC in various sections or chapters of the code.

Use this brief guideline of related code items for practical field application for safer and more compliant deck construction. The application of this guideline should help in application of the building codes for construction of decks. Most of the custom lumber yards will also design and spec out your deck requirements for you. Use this guide to assist yourself in the construction process. If you have any questions on any specifics related to your deck construction do not hesitate to call. Apply these basic minimum standards in your planning and build process.

Minimum live load design for a deck is 40 PSF, guardrails and handrails must withstand a single concentrated load of 200 pounds applied in either direction and balusters and panel fills must sustain a minimum applied load of 50 PSF. Toenail of guardrails into the deck flooring for support would not be consistent with the requirements and as such requires positive anchors (bolts/lags and hardware) for attachment.

All wood in contact with the ground shall be approved pressure preservative treated wood suitable for ground contact. This includes areas in contact with concrete or masonry. Any wood joist closer than 18 inches to the ground or any wood beam or girder closer than 12 inches to the ground must be approved for ground contact. All other non-structural wood within 6 inches of the grade must be pressure preservative treated wood. Composite and plastic flooring (deck) materials, if listed, may be used as could wood types naturally resistant to decay.

Flashing is required at the connection to the structure. This must be applied such to prevent entry of water to the structural portions of the building. Aluminum flashing is not allowed for this purpose as it reacts negatively to pressure treated lumber. Various products exist – copper, stainless steel, UV resistant plastic, or galvanized steel coated with zinc coating. House siding, or the exterior finish system of the structure, must be removed prior to the attachment of the deck.

Ledger boards must be attached with the use of positive anchors – bolts or lags. Positive anchor attachment is required to the primary structure, (except for free-standing decks). This will include lags or bolts at the ledger board as well as joist hangers to the ledger. The ledger board must be as large or larger than the joist size. In some instances where wood I-joist were used in the construction of the home, ledger boards cannot be attached and as such, in these instances, a free-standing deck is required. Attachments to bay windows or house overhangs are generally prohibited and in such cases a free-standing deck is the required alternative. Lag screws must be a minimum of ½" and be of galvanized or stainless steel. Newer wood screws approved for such applications may also be used (such as LedgerLok or Simpson Strong-Drive Screws) but may not be less than ¼" shank. Flashing is required where the ledger is connected to the existing structure and protecting the ledger connection with a membrane is an excellent practice.

Any free-standing decks more than 12 feet above grade should have diagonal bracing to resist shifting and movement. Diagonal bracing should be considered for all decks greater than 4 feet above grade.

Joist Requirements per table*:

Joist Size	On Center Spacing of Joist		
	12"	16"	24"
2 x 6	10' – 0"	9' – 1"	7' – 11"
2 x 8	14' – 2"	12' – 0"	10' – 2"
2 x 10	16' – 10"	15' – 2"	12' – 6"
2 x 12	20' – 4 "	17' – 7"	14' – 4"

*Spans are extracted from Floor Joist Spans Table R502.3.1(2) for hem-fir # 2 or better

Generally cantilevered joists should not extend more than 2 feet beyond the girder without an engineered design.

Continuous Solid 2x blocking is recommended between the joists and framing members are to be secured with proper sized U-type joist hangers. The ledger is to be a minimum of the same size as the joist and attached with lags. A 2x rim joist is required and a double rim joist is recommended where guards/railings are to be attached.

Beam sizes* are generally acceptable as:

Assemblies of two (2) 2 x 8s

Joist Span	Post Spacing
6'	up to 6'

Assemblies of two (2) 2 x 10s

Joist Span	Post Spacing
6'	up to 8'
8'	up to 6'
10'	up to 4'

Assemblies of two (2) 2 x 12s

Joist Span	Post Spacing
8'	up to 8'
10'	up to 6'
12'	up to 4'

Assemblies of three (3) 2 x 12s

Joist Span	Post Spacing
10'	up to 8'
12'	up to 6'

By working the joist span and post spacing grid effectively joist sizing may be reduced. Many options for beam sizing and post spacing are available; however these generally acceptable spans will be appropriate for most requirements. Consideration of any large, heavy point loading on the decks should taken into account – hot tubs generate a significant point loading and the joists, beam, and post spacing should be changed to accommodate the added weights.

All footings are to be placed to frost level, for Fremont, a minimum of 48 inches below grade.

Within this information sheet are both specific code requirements as well as good construction practices for deck construction. If you have additional questions or your deck is of a significantly complex nature consultation and design might be appropriate.

See also "Stairways – Handrails" as provided at www.fremont.nh.gov or pick up a copy at the Building Official's Office.

5/27/2008

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This information was compiled for a specific purpose, as an advisory check sheet, and its' use and interpretation otherwise is not intended - Thomas Roy – Building Official/Code Enforcement